

AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated hereafter (where underlining “_” denotes additions and strikethrough “-” denotes deletions).

1-4. (Cancel)

5. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft and defining a fluid ingress opening and a fluid egress opening;
a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid, the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid ~~The apparatus of claim 2,~~ wherein a given opening selected from a set of openings consisting of the fluid ingress opening and the fluid egress opening is generally aligned with the void; and ~~further including:~~

a fluid seal abutting the rotor, the fluid seal generally aligned with the void and the given opening, wherein the fluid seal substantially communicates direct fluid flow between the given opening and the void.

6. (Original) The apparatus of claim 5, further including:

a pipe received by the given opening, the pipe extending at least partially into the hollow interior of the housing.

7. (Original) The apparatus of claim 6, wherein the front face of the rotor defines a notch extending around the circumference of the void, wherein the fluid seal fixedly abuts the notch and extends therefrom to the pipe.

8-9. (Cancel)

10. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft and defining a fluid ingress opening and a fluid egress opening;
a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid, the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid; and

~~The apparatus of claim 2, further including:~~ a shaft defining a hollow interior in communication with the void, wherein a non-~~solid~~fluid flows either into or out of the housing via the hollow shaft.

11-13. (Cancel)

14. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft, the housing defining a fluid ingress opening and a fluid egress opening;

a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid, the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid;

a restrictive element disposed in the fluid passage, wherein fluid in the fluid pressure on one side of the restrictive element is at a higher pressure than fluid on the opposite side of the restrictive element; and

~~The apparatus of claim 13, further including:~~ a second restrictive element disposed in the fluid passage, wherein fluid in the fluid passage on one side of the second restrictive element is at a higher pressure than fluid on the opposite side of the second restrictive element.

15. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft, the housing defining a fluid ingress opening and a fluid egress opening;

a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid,

the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid;

a restrictive element disposed in the fluid passage, wherein fluid in the fluid pressure on one side of the restrictive element is at a higher pressure than fluid on the opposite side of the restrictive element; and

~~The apparatus of claim 13, further including:~~ a restrictive element biaser adapted to bias the restrictive element such that fluid flow past the restrictive element is approximately at a predetermined value.

16-17. (Cancel)

18. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft, the housing defining a fluid ingress opening and a fluid egress opening;

a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid, the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid; and

~~The apparatus of claim 2, further including:~~ a transducer disposed within the housing, the transducer adapted to emit ultrasonic energy into the cavity.

19. (Original) The apparatus of claim 18, wherein the transducer is affixed to the rotor.

20. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft, the housing defining a fluid ingress opening and a fluid egress opening;

a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid, the rotor including a front face and an opposed rear face with a longitudinal exterior surface extending therebetween, wherein the front face defines a void extending rearward toward the rear face, the rotor defining a fluid passage extending generally outward from the void to the longitudinal exterior surface, wherein responsive to rotation of the rotor and fluid flowing through fluid passage in the rotor, cavitation occurs in the fluid; and

~~The apparatus of claim 2, further including:~~ a volute ring circumferentially disposed around the rotor, the volute ring adapted to spin about an axis and receive fluid from the rotor, wherein responsive to the volute ring spinning about the axis and having a fluid therein, the fluid develops a pressure gradient with maximum pressure distal from the axis.

21. (Cancel)

22. (Currently Amended) An apparatus for facilitating cavitation in fluids, the apparatus comprising:

a housing having a generally hollow interior, the housing defining a first opening for receiving a shaft; and

a rotor disposed within the hollow interior of the housing, the rotor adapted to couple with a shaft, the rotor having an exterior surface, the rotor defining a first opening disposed on the exterior surface and a second opening with a fluid passage extending therebetween, wherein the fluid passage facilitates cavitation in a fluid,
~~The apparatus of claim 1,~~ wherein the rotor defines a front face and an opposed rear face, the exterior surface extends longitudinally between the opposed front and rear faces, wherein the second opening is disposed on the front face.

23. (Cancel)

24. (Currently Amended) An apparatus for facilitating creation of cavitation in fluids, the apparatus comprised of:

- a base having a rear wall and a longitudinal wall, the rear wall and longitudinal wall each having an interior side and an exterior side, wherein the longitudinal wall extends from the rear wall such that the interior side of the rear wall and the interior side of the longitudinal wall define a cavity, the rear wall having an opening extending from the interior side to the exterior side for receiving a shaft;
- a face plate having an exterior side and an interior side, the face plate removably mounted to the base ~~plate~~ with the interior side of the face plate facing towards the cavity, wherein the face plate defines a first fluidic passage;
- a rotor disposed within the cavity, the rotor having a front face, an opposed rear face, and a surface extending therebetween, the face plate defining a void for receiving a fluid, the void extending rearward into the rotor, the rotor defining a second fluid passage, the second fluid passage extending between the void and the exterior surface of the rotor, the second fluid passage for communicating a fluid between the void and the cavity; and
- a sealing element abutting the face of the rotor, wherein the sealing element, the void, and the first passage define a first fluidic region, wherein a second fluidic region is

defined by the region of the cavity exterior to the rotor and the sealing element, wherein fluid is communicated between the first fluidic region and the second fluidic region via the second fluid passage and the sealing element substantially prevents direct communication of fluid between the first and second fluidic regions.

25-28. (Cancel)